

REMARKS/ARGUMENTS

Claims 30-38 are pending in the present application. Claims 30, 37, and 38 are currently amended. No claims are canceled. No claims are added. Thus, following this Office Action response, claims 30-38 will remain pending.

In the Office Action, the Examiner rejected claims 30-36 under 35 USC §102(b) as being anticipated by Kvant (a previously known Soviet/Russian orbital vehicle) with the Examiner citing to references as evidence of the features of Kvant, namely references to Kvant-1 and Kvant-2 at http://russianspaceweb.com/mir_kvant.html (hereinafter "Russian Spaceweb page") and <http://www.spaceflight.nasa.gov/history/shuttle-mir/multimedia/diagrams/shut-mir.jpg> ("NASA drawing").

Applicant concedes that the Kvant was publicly known more than one year prior to Applicant's earliest priority date, but does not take a position on whether the cited web pages accurately describe features of the Kvant vehicle. In this response, Applicant presents arguments as to why the claims are allowable over the cited references that purport to describe and/or show features and/or uses of the Kvant vehicle and other spacecraft as well as being allowable over the admitted prior art use of spacecraft such as the Space Shuttle, Mir, Kvant, Progress, etc. (collectively referred to herein as "the cited art"). Applicant could have presented arguments as to a lack of showing that the printed references accurately describe the admitted prior art spacecraft and/or a lack of showing that the printed references were printed publications prior to any of Applicant's priority or critical dates. However, since the claims are allowable over the teachings of those references even if they were indeed prior and printed publications, the issue of whether they are prior and whether they are printed publications need not be addressed at this time.

In the Office Action, the Examiner also rejected claims 37-38 under 35 USC §103(a) as being obvious over Kvant in view of Okamoto (U.S. Patent No. 5,005,786).

In response to the Office Action, Applicant has currently submitted amended claims that more clearly distinguish the invention from the Kvant vehicle. The claims, as submitted, are allowable over Kvant because each of the claims recites at least one element not found or suggested by the Kvant vehicle. Additionally, Applicant submits that what Kvant lacks is not made up by the other cited art. The remarks herein and responses to the arguments of the Examiner more clearly point out how the claims are allowable over the cited art.

In response to claim 30, the Examiner argues “The Kvant also obtaining stability and propulsion from the docking elements because the Progress ship can supply propulsion and orbital stability and the Mir core module providing orbital stability and propulsion through the Soyuz craft on the other end of Mir.” The references above do not teach or suggest that the Progress-M spacecraft ever provided orbital stability or propulsion to the Kvant and are at best ambiguous on this matter.

The Examiner also argues “Also as seen in the Mir and the Kvant, the Kvant has two docking ports configured to allow the canister to be driven by one of the docking elements (the one with the Progress on it in the figure) into position for docking to the other element (the one that is attached to the core module in the figure).” The NASA drawing does not teach or suggest that the Progress-M spacecraft ever drove the Kvant into position for docking to another docking element and is at best ambiguous on this matter.

In fact, Kvant was only involved in a single docking event in which it was driven as an individual element during the April 1987 arrival of Kvant to the Mir space station. During that docking, Kvant was indeed “driven” into position, but by another vehicle to which Kvant was attached to via a truss connection that was pre-integrated on the ground prior to launch, and Kvant was specifically not “driven by one of the docking elements into position for docking to the other of the docking elements.” All other docking events involving Kvant required that Kvant remain connected via its docking port to the Mir space station, in a passive, non-maneuvering mode while another element was actively controlled to mate to Kvant. At no point was Kvant ever driven into position for docking to another element via connection by docking port.

The Examiner also argues “Also as seen in the figures the Kvant-1 module is ‘adapted’ to be propelled by a propulsion system that is present in orbit independent of the launch of the supply canister in that it is ‘adapted’ to be propelled by ‘a special space tug’ which is talked about in the second to last paragraph of [the Russian Spaceweb page].”

Claim 30 recites “wherein the supply canister is adapted to be propelled by a propulsion system present in orbit independent of the launch of the supply canister” and that element is not disclosed or suggested by the cite art. Quoting from the Russian Spaceweb page, “After Proton rocket hauled Kvant-1 into the initial orbit, a special space tug was expected to deliver Kvant-1 to its destination.” That reference does not disclose or suggest a propulsion system (the “space tug” or other propulsion system) in orbit independent of the launch of the Kvant, but further research into this issue

would reveal to the researcher that the actual Kvant space tug was indeed attached prior to launch and thus was not “in orbit independent of the launch”.

It should be noted that, in the terminology used in the Soviet space program, a spacecraft may be called a “space tug” even if the unit is attached to the spacecraft that it will propel prior to launch, in variance with NASA and US terminology. Therefore, the use of the term “space tug” in the Russian Spaceweb page does not teach a propulsion system in orbit independent of the launch of the Kvant, but is merely an expression of how Kvant was actually implemented using Soviet space program terminology.

Furthermore, claim 30 also recites “the two docking ports configured to allow the supply canister to be driven by one of the docking elements into position for docking to the other of the docking elements.” The Russian Spaceweb page recites “The space tug, which delivered Kvant-1 to Mir was then separated from the complex, revealing a rear docking port on the module.” This reference simply states that a rear docking port was “revealed” after the “space tug” separated. It does not disclose or suggest that propulsion system, in orbit independent of the launch of the Kvant, was docked to Kvant in orbit. Therefore, the “space tug” cannot be considered as a “docking element” that docks with one of the “two docking ports” on the Kvant. Claim 30 has been amended to even more clearly recite that “each of the two docking elements are in orbit independent of the launch of the supply canister” and therefore, Kvant’s propulsion system attached on the ground prior to launch and launched with Kvant does not anticipate the claimed docking elements.

The Examiner’s arguments with respect to the NASA drawing are not clear, but they have been interpreted as an argument that the Space Shuttle, when attached to Mir via a “docking module” (shown in orange in the original NASA drawing), that the Space Shuttle and Mir were in orbit independent of the Kvant and that the “Space Shuttle/docking module/Mir” combination, when Kvant is attached, provided propulsion to drive the Kvant vehicle into position for docking to another docking element.

The NASA drawing shows the Kvant simultaneously docked with Mir and with the Progress vehicle. It should be apparent from the drawing that it is not feasible (and may well be impossible) for the Space Shuttle to provide propulsion to Mir, given their relative positions, and it would be beyond contemplation to use the Mir as a linkage for the Space Shuttle to drive the Kvant into docking with Progress. The Mir structure and docking interfaces are not designed to drive, and cannot support driving, Mir with the Space Shuttle.

In view of the above, Applicant's submit that claim 30 is allowable over the cited art and the rejection of claim 30 should be withdrawn. Claims 31-36, which depend from claim 30, are in condition for allowance, for at least the reasons discussed in relation to claim 30, as well as for the additional elements they recite.

In rejecting claim 37, the Examiner argued "Also as seen in the figures the Kvant-1 module is 'adapted' to be propelled by a propulsion system that is present in orbit independent of the launch of the supply canister in that it is 'adapted' to be propelled by 'a special space tug' which is talked about in the second to last paragraph of the [Russian Spaceweb article] and also as seen in [the NASA drawing], the Space Shuttle attaches to the docking module of the Mir and provides propulsion for the entire craft and is independent of the launch of the supply canister. This propulsion may be used for driving the supply canister by the docking elements to a position for docking with another device at the other end of the device when the progress ship is not attached." The reference does not teach or suggest that the Space Shuttle ever drove the Kvant via Mir. In fact, doing so would not be practical or feasible. The positioning of the space shuttle in respect to the Kvant would prevent the space shuttle from propelling the Kvant along the necessary X-axis direction for docking without rotation, but only along the Z-axis direction without rotation, if the Space Shuttle were to drive Mir, and further it should be apparent from the position of the Space Shuttle in the NASA drawing that it could not drive the Mir.

Claim 37 is allowable because it recites elements not disclosed or suggested by the cited art. For example, claim 37 recites that at least one docking element providing propulsion to the supply canister is an orbital element present in orbit independent of the launch of the supply canister. Kvant provides its own propulsion system that is present in orbit only in connection with the launch of the Kvant vehicle, namely its pre-attached propulsion system, so that prior art would not anticipate that element of claim 37. The Space Shuttle/Mir combination also does not disclose or suggest the claimed element, despite the Examiner's arguments, as explained above. Okamoto does not make up for what Kvant lacks, nor was it cited for anticipating that element of claim 37.

Therefore, claim 37 is allowable and the rejection of claim 37 should be withdrawn. Claim 38 is allowable for at least those same reasons and the rejection of claim 38 should also be withdrawn.


CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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